

Variation in the distribution of demersal fishes across hard and soft bottom substrate patches

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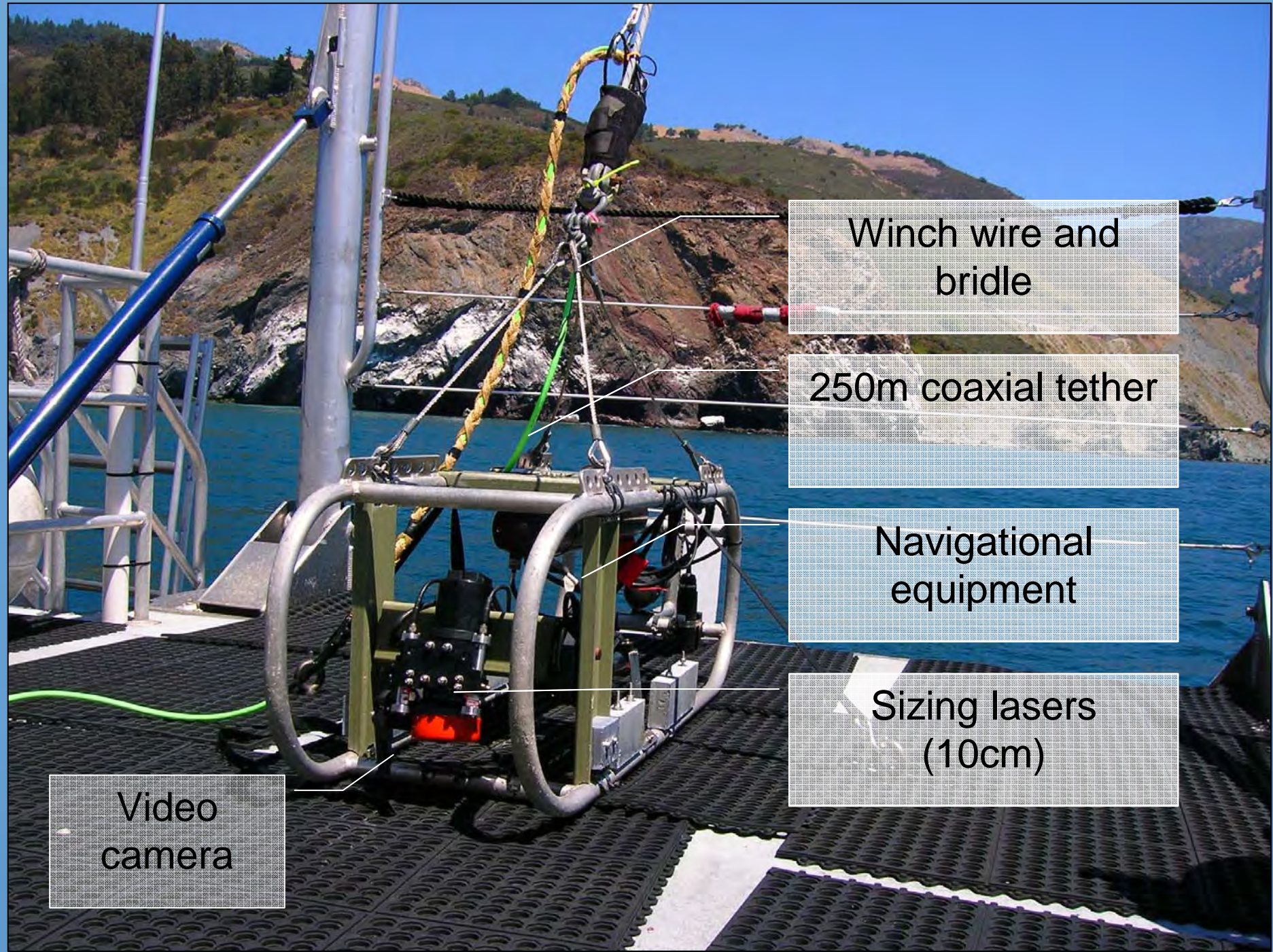
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The distribution of demersal fishes across macrohabitat ecotones on the continental shelf has not been well documented, particularly across sand-rock interfaces. We analyzed continuous video footage collected with a towed camera sled at the Piedras Blancas State Marine Conservation Area to investigate selected demersal fishes relative to 1) seafloor substrate type, 2) topographic relief, and 3) sessile macrofaunal invertebrates (e.g. sponges, octocorallia). These data, collected in the field at 1-minute intervals using a programmable keyboard, revealed broad patterns in the distribution of fishes, invertebrates, and substrate type. Post-processing of video footage in continuous non-overlapping video quadrats is in progress to resolve a more fine-scale distribution of fishes over biotic and abiotic attributes of seafloor habitats. Ultimately, these data will fill a critical gap in understanding how fishes and habitats are distributed along the central California coast and support future efforts in marine spatial planning along the west coast.

Methods

In the summer of 2007 and 2008, a towed camera sled was used to conduct 26 video transects at the Piedras Blancas State Marine Conservation Area (PBSMCA) and adjacent areas. Each tow was conducted for a maximum of 65 minutes, resulting in a maximum transect length of about 1000m. Substrate and biogenic habitat as well as fish presence data were collected at one minute intervals in real time using a modified keyboard (X-keys, PI Engineering) and geo-referencing software (MediaMapper, Red Hen Inc). These data were then plotted concurrently to observe broad patterns in distributions.

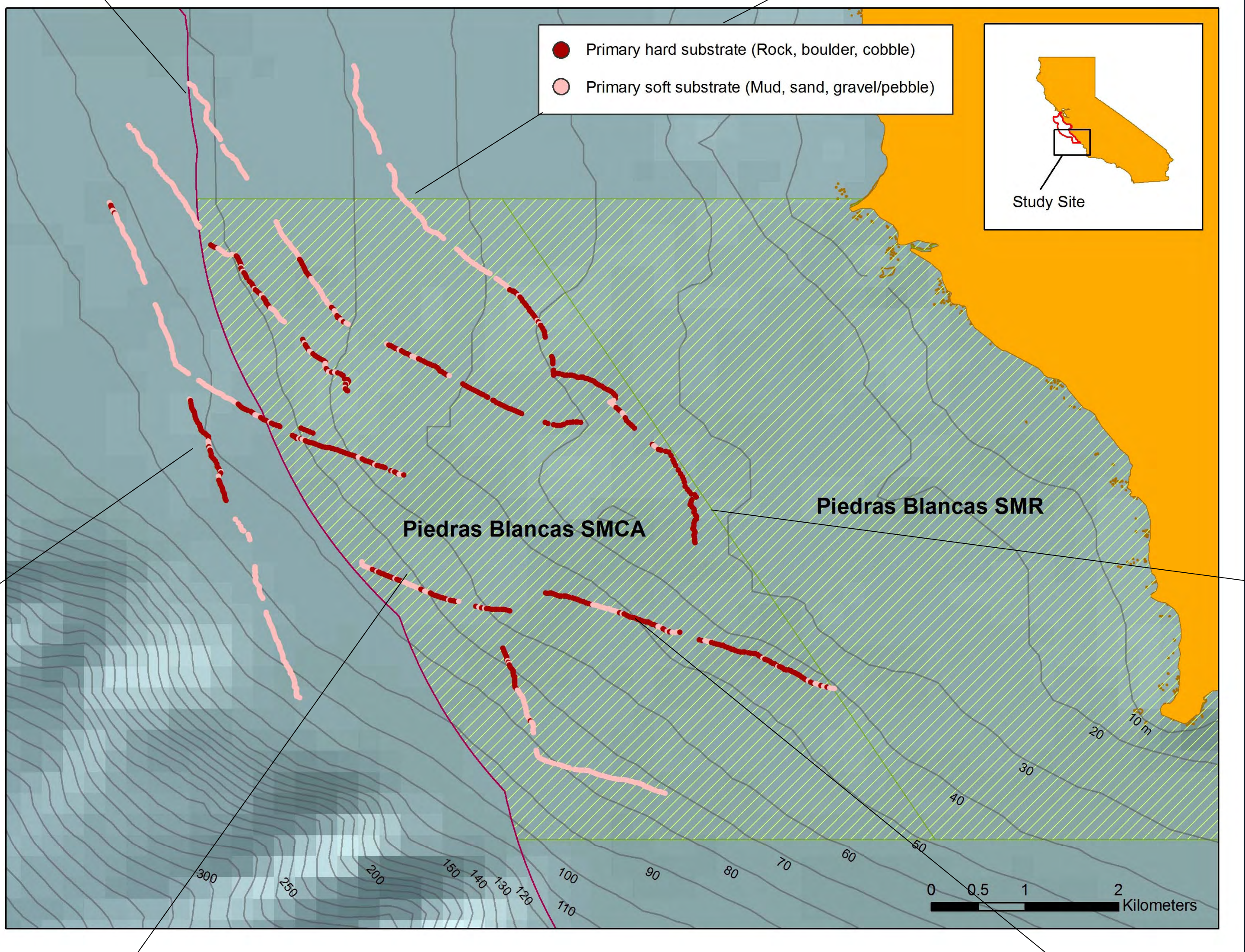
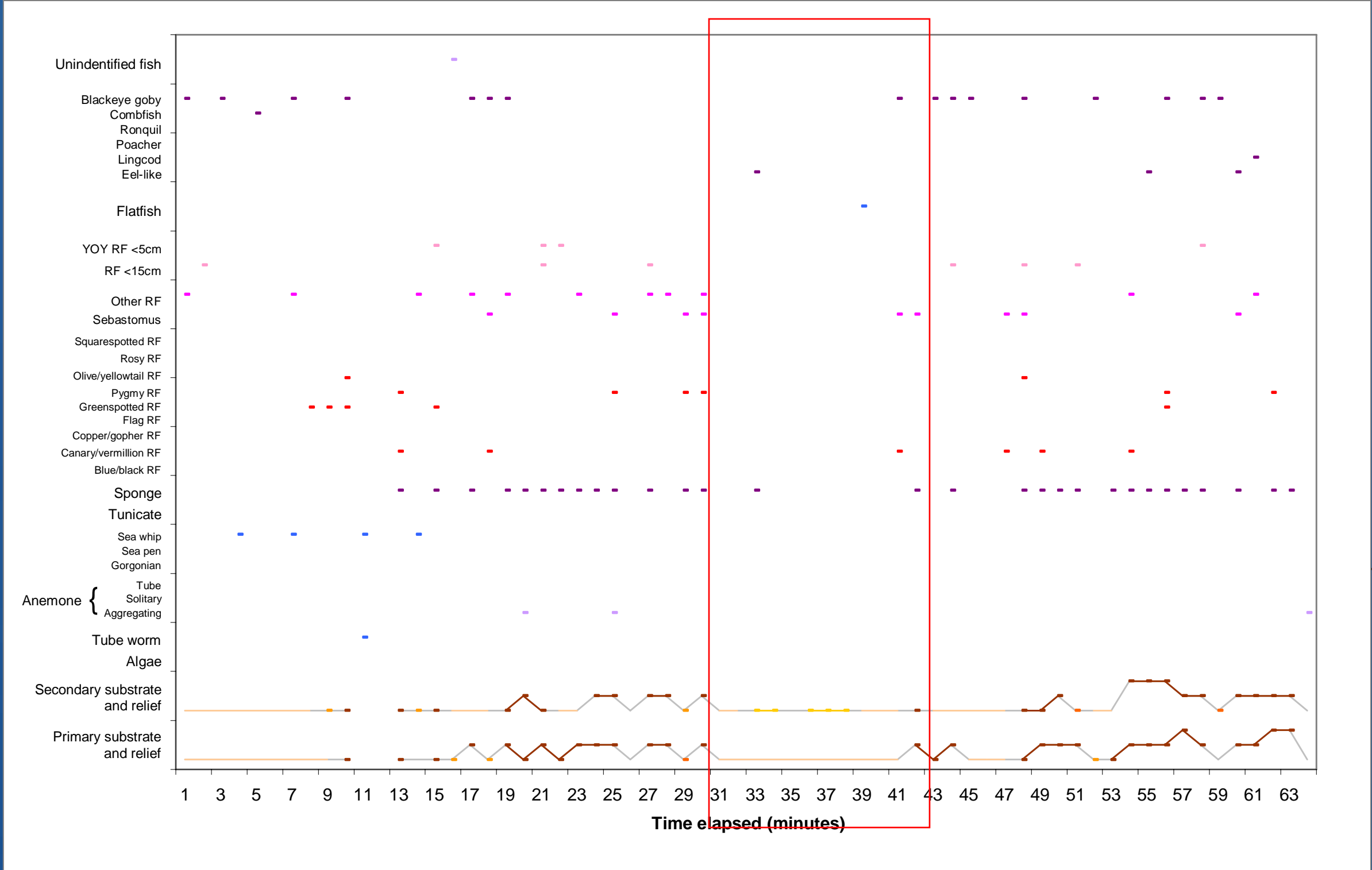
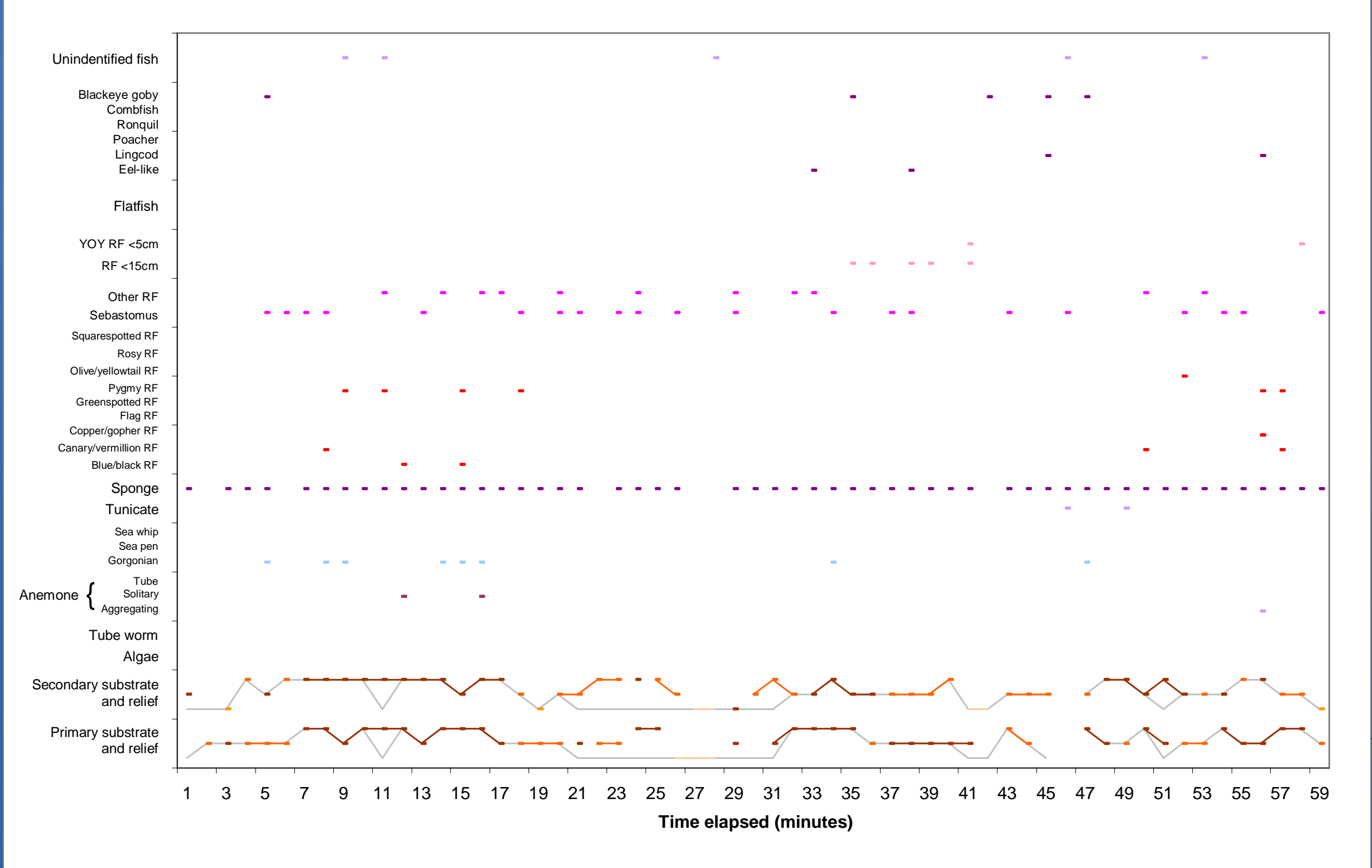
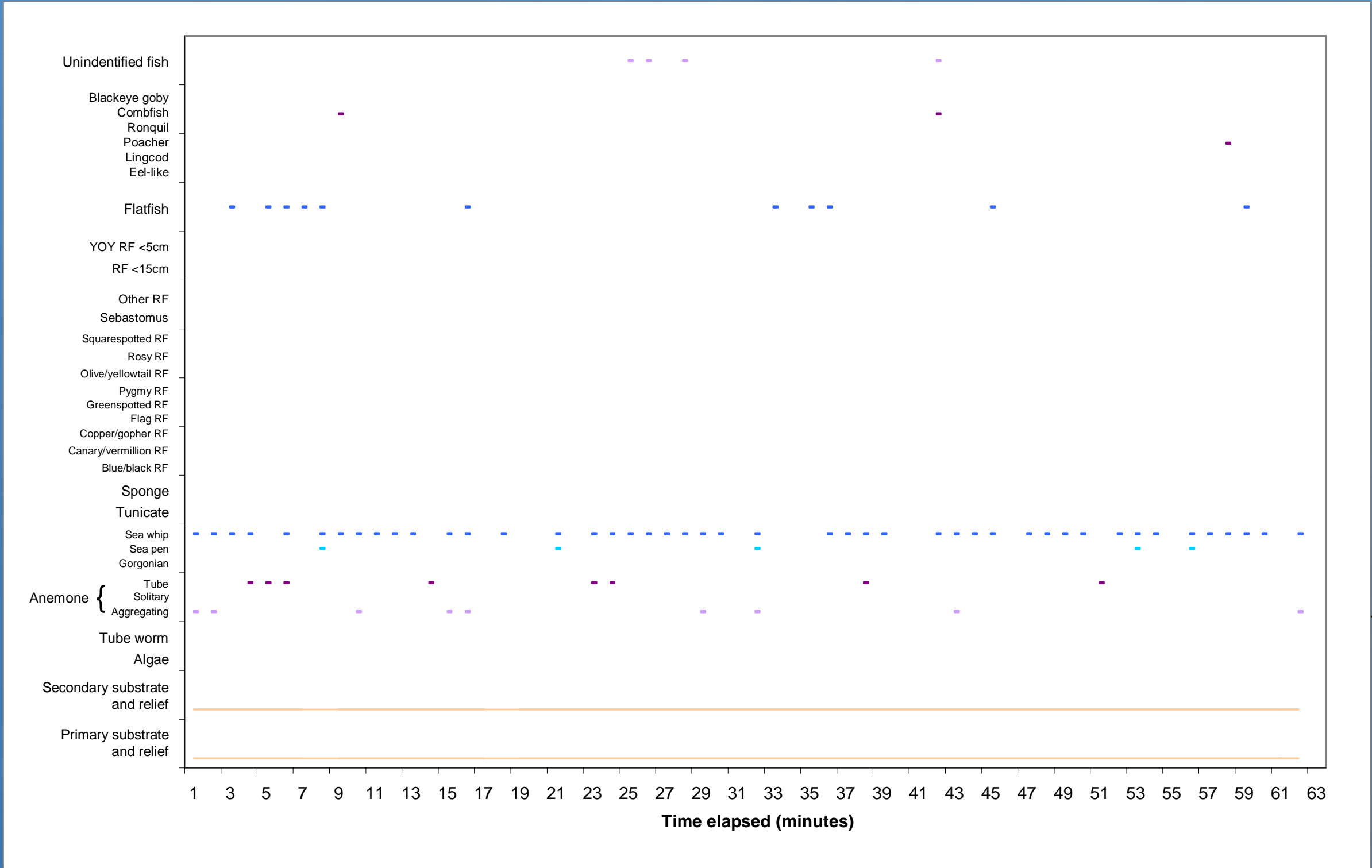


Towed camera sled system (above) and the X-keys modified keyboards (right)



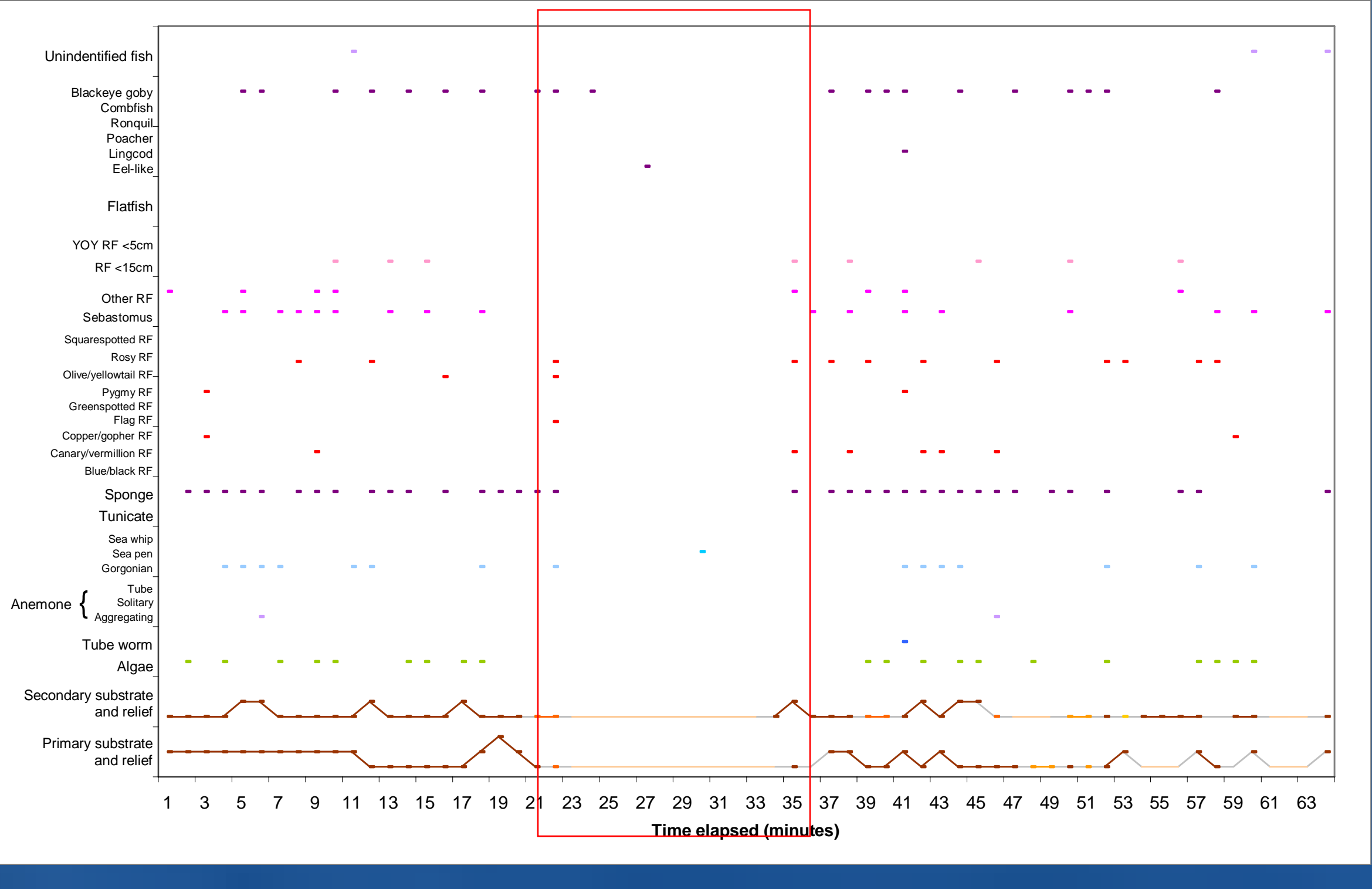
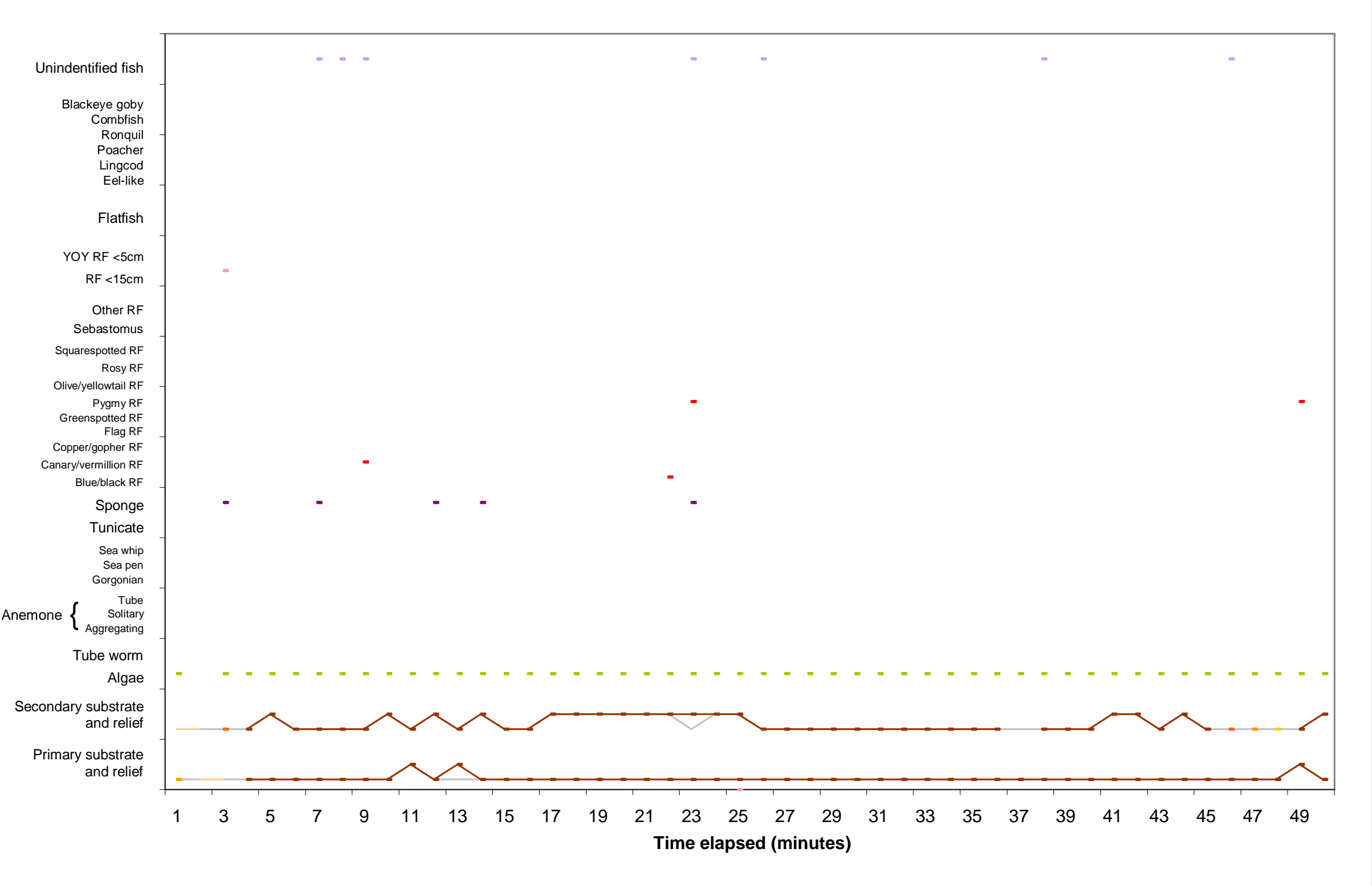
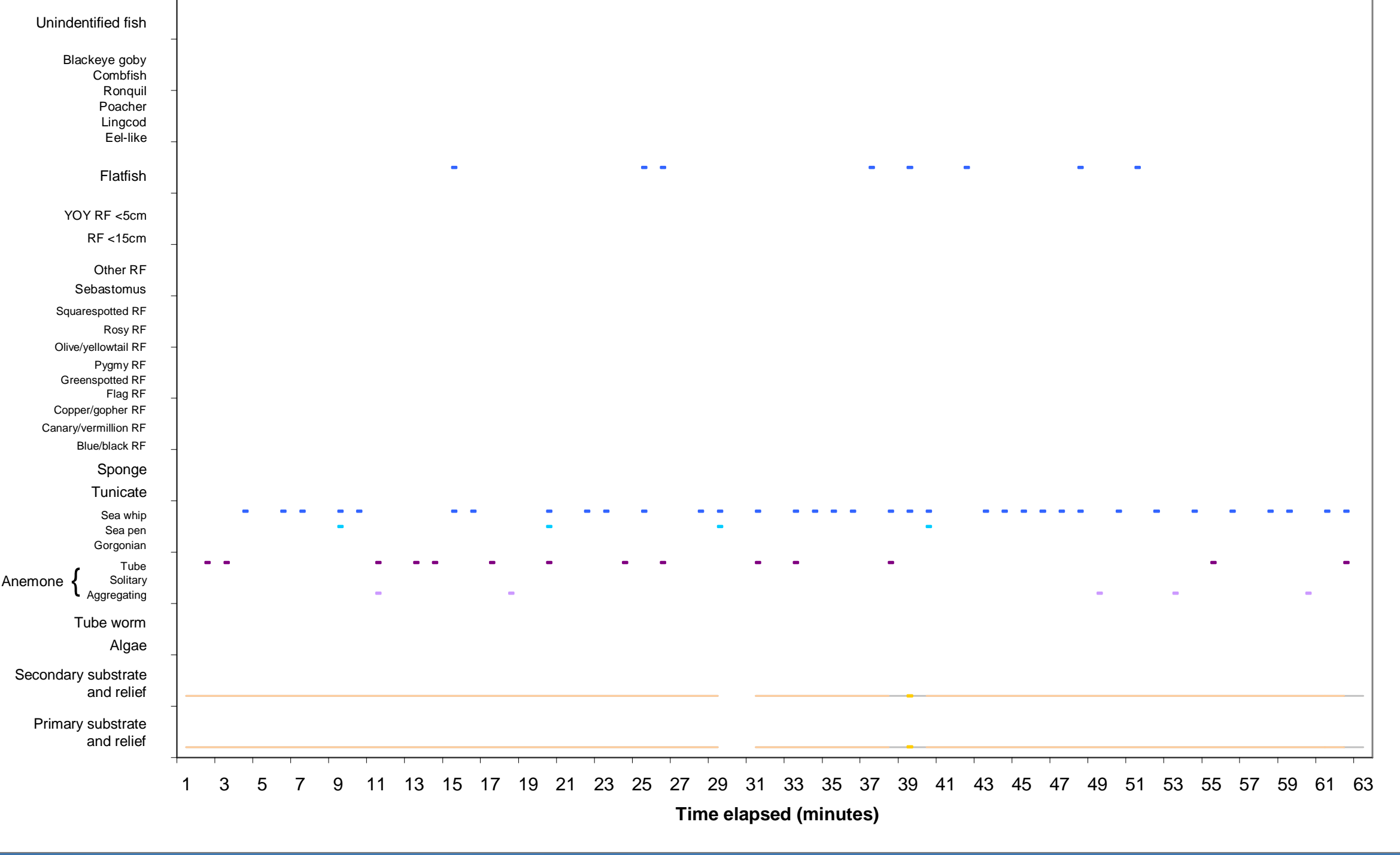
Results

Broad distribution data are shown in the concurrent plots of select transects at PBSMCA. Biogenic habitat show dispersal patterns with relation to primary substrate classification (e.g. sea pens and sea whips with soft sediments; sponges and gorgonians with hard substrates). Fish distributions show some variation over substrate types, with flatfishes occurring over soft substrate and rockfishes occurring less regularly over hard substrates.



Next...

Subsequent analyses will use a non-overlapping video quadrat technique. Processing methods will be similar to this approach but will consider the habitat, invertebrate, and fish distribution at each point along the entire transect. It is expected that this finer-scale approach will reveal trends of distributions near and across ecotone boundaries.



Acknowledgements

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